APRIL 1979

The Spark Gap

BOOK V VOL IV

WITK WA1AHC

Official Journal of the Wellesley Amateur Radio Society

It Seems to Me...

The business meeting held March 15 was one of the most important of the year, due to the number of important issues voted on, and was probably the best attended business meeting of the year as well, which was good to see. However, it was still a disappointment due to the results of the constitution voting. Despite the fact that this was well publicized in advance, even going so far as to send out an unprecedented special mailing containing the complete proposal, a letter of explaination, and a ballot with an envelope to return it, only some 40% of the paid up club members bothered to vote on it at all. Since yes votes must be received from 51% of the total membership to pass, the issue could not be decided either way.

Certainly no member is expected to participate in everything the club does; for most activities there are plenty of volunteers to carry it out very well. However, in a case like this, a member's lack of participation does actual harm to the future of the club. A lot of work has gone into the writing of this constitution over a long period of time. The old constitution needs some modification since it was written several years ago when the club was quite different from what it is now. Under the terms of this old constitution, 51% of the total club must approve any changes to it and since less than this number of total votes was received, nothing could be done. It is a shame that out of all those people who cared enough to join the club, that so few care enough to vote on an issue that is so important to its future, and by their lack of participation, have held back those who did care enough to vote. The fact that of the votes received not one was recorded opposed indicates the popular approval of the new constitution.

If you are one of those who did not yet vote on this issue, you still have a chance. Since this was deemed too important to just let die, it was voted to extend the period of balloting an additional thirty days past the original deadline of March 15th. If you have not yet voted, do so NOW! □

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A reminder about the WARSWAS competition: The contest ends on March 31 at midnight UTC. All entries must be received at the club by April 10th to be included in the results to be printed in the May issue of the Spark Gap. Why not save yourself some trouble and bring your entry down at the April 5th meeting? Don't forget to include any comments you might have about the contest format that could be included next year! □

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Our guest speaker at the April 5th meeting will be Robert Mason of the Federal Aviation Agency (FAA). His exact topic has not yet been received but you may remember his interesting talk on FAA radio installations that he gave last spring. Hope to see you there! □

MEETINGS THIS MONTH:
April 5, 1979 at 7:30 pm
April 19, 1979 at 7:30 pm
Intermediate Bldg., Wellesley Hills, Mass.

FROM THE MAILBAG

Are you interested in spending some time on a beautiful spring day providing communications for 3600 walkers as they trudge from Boston to Newton Centre? The tenth annual Greater Boston Walk for Hunger is sponsored by Project Bread, a Boston-based concern which raises money for over 29 local and international projects dedicated to the war on hunger. Over 95% of the $500,000 they've raised in the past four years has gone directly to these diverse organizations. The Wellesley and Middlesex ham clubs can provide a valuable public service for the walk. As a radio operator, you'll be the first line of communications for people with sprained ankles, lost kids, or possibly more serious troubles.

The walk for Hunger needs a good communications system--an ideal use of Amateur radio. Arrangements will be made to use the 96/36 machine for that day, which should cover our needs perfectly. The Walk begins at around 7:30 am Sunday May 6 at the Boston Common, goes down Beacon Street to Newton Centre, then up Centre Street to Newton Corner, then to Charlesbank Road, then into Cambridge and back to the Common, a 20 mile walk. There will be 8 checkpoints and up to 10 poopout trucks. The last of the walkers trample in at 7 pm.

Could you spare a few hours sometime that day and help make the communications system work? You don't even need a license--just a willingness to help out. If you are licensed and have a 2 meter rig (or we can loan you one), you can park your car at the checkpoint and operate from there, or use a portable rig, or operate from the 12 volt system of the poopout truck. Just a few hours of your time would greatly benefit the Walkathon.

Interested? Write Rick Ferranti, WA6NCX/1, 215 Herrick Road, Newton Centre, Mass. 02159, call 964-0744, or reach me via the 96/36 repeater and let me know if you can help out. Mark Sunday, May 6 on your calendar as a great chance to have fun in the beautiful spring air with ham radio--and help a few thousand people as well. □

To the Editor,

Friendly competition in the form of the WARSWAS contest is an excellent way to foster increased on-the-air operation and proficiency of the club members. However the way the award is presently structured the emphasis is still on individual operators rather than involving the entire club. It is for this reason I'd like to pass along an idea I heard during a QSO with George, WA7OVP, who described the WAS program run by the Valley Radio Club in Oregon.

The way their award works is as follows:

1) It is an annual event.
2) The competition period is for 30 days only.
3) The club membership is divided into two equal sized teams who compete against each other.
4) Scoring is 1 point for each state worked by an individual. (QSL card not required.)
5) The winning Team is determined by adding up the points scored by the members in each team. (This gets everyone involved, since individuals are contributing points to the overall effort on the team.)
6) Now comes the best part--the incentive. The losing team foots the bill for a meal (pot-luck supper type of thing) for the winning team.

George reports his club has run this award for 4 years with a great deal of success.

Sounds pretty interesting to me, what does anyone else think about it?

de Bill Hanlon, N1ADY □

hr REPORT

Texas' RFI "fine" bill, which actually proposed that interference victems be permitted to sue for up to $100 damages, has been withdrawn. Efforts by W5EOZ and others, who worked with sponsor Rep. Sam Hudson, brought the turnaround. Texas HB 186, which requires built in TVI filters on all TV sets sold in Texas, is still alive.

hr Report, March 9, 1979□

The Spark Gap

Official Journal of the Wellesley Amateur Radio Society

EDITOR-IN-CHIEF: NELS J. ANDERSON, K1UR
32 WESTGATE ROAD, APT. 6
CHESTNUT HILL, MASS. 02167

THE "SPARK GAP" IS A MONTHLY PUBLICATION OF THE WELLESLEY AMATEUR RADIO SOCIETY. ITS PRIMARY PURPOSE IS TO KEEP ITS MEMBERS ABREAST OF CURRENT HAPPENINGS, F.C.C. RULES & REGULATIONS CHANGES, AND TO LIST EQUIPMENT OFFERED FOR SALE OR TRADE BY MEMBERS. MEMBERS ARE ENCOURAGED TO CONTRIBUTE TO THE "SPARK GAP" AND MAY SEND THEIR ARTICLES (TYPEWRITTEN IF POSSIBLE) TO THE EDITOR-IN-CHIEF OR TO THE CLUB ADDRESS.

THE WELLESLEY AMATEUR RADIO SOCIETY IS A NON-PROFIT ORGANIZATION DEDICATED TO THE PROMOTION OF AMATEUR RADIO THROUGH INSTRUCTION, FELLOWSHIP, DEMONSTRATION, AND ENCOURAGEMENT OF PARTICIPATION. ANNUAL MEMBERSHIP IN THE SOCIETY IS $5. THE CLUB YEAR RUNS FROM SEPTEMBER 1 - JUNE 30. AMATEUR NOVICE AND GENERAL CLASSES ARE CONDUCTED REGULARLY AT NO COST. TO ENROLL IN A CLASS, OR GAIN INFORMATION ABOUT THE SOCIETY IN GENERAL, WRITE:

THE WELLESLEY AMATEUR RADIO SOCIETY
324 WASHINGTON STREET
WELLESLEY HILLS, MASS. 02181

Executive Minutes

Meeting of March 3, 1979:

The meeting was called to order by President Don Chesley at approximately 8:00 pm.

It was announced that the ballots for the new club constitution had been mailed out for balloting to take place at the March 15th meeting.

The Boston Marathon participation on April 16th was discussed. A meeting had been held with marathon officials within the previous week. One of the major problems last year was the proper identification of checkpoints and this will be clarified this year. Also our operators will be more easily identified this year by the use of special tee-shirts and hats.

The meeting closed with discussion of the upcoming auction to be held on April 7th. □

Minutes

Meeting of March 15, 1979:

The meeting was opened at 7:54 pm by President Don Chesley with the reading of several reports.

The primary business of the meeting was the voting on two major items. The new club constitution was voted on first. Absentee ballots and in person voting totals were made, however 51% of the total club membership was needed to pass the constitution, and this number of total votes was not received. It was motioned and passed that voting would be extended for thirty days to allow late mail-in votes to arrive, so as to get the required number of votes to decide the issue.

The second major issue was the voting to purchase the 63/03 repeater currently owned and operated by Bill Downing and several others. It was voted on and approved. The club will take over operation after the March 31st executive committee meeting, during which a committee will be set up to run the repeater.

A motion was made to drop affiliation with the 96/36 repeater after June. After discussion, the motion was dropped.

Voting on Field Day sites was taken. Under consideration were Peaked Hill on Martha's Vineyard, Quabbin Reservoir and the Wellesley Town Hall. The town hall received one vote, with all others going to the Martha's Vineyard site, and so since permission has already been received to use it, the club will be located at Martha's Vineyard for Field Day 1979.

The upcoming auction and BAA Marathon were both discussed briefly. Information for Marathon participants will be handed out at the April 5th meeting.

It was announced that Amateur radio operators were needed for the "Walk for Hunger" and "March of Dimes Superwalk", both to be held in Boston on May 6th.

Finally, it was announced that a meeting to discuss future equipment needs for W1TKZ will be held on April 26th at 7:30 pm. All interested are asked to attend. □

OLDE TIME RADIO

By Nels Anderson, K1UR

Most hams are pretty familiar with the world of radio communications as it is today, but how many are aware of how we got to where we are today? Many have heard of the name Marconi and it is associated with the invention of radio back around the turn of the century. There is even a national park on Cape Cod named after Marconi. There were a lot more people involved, however, and radio's development goes back quite a bit further than the turn of the century.

During the 19th century there was great interest in improving communications. Two major advances were the Morse telegraph of the 1830's and the Bell telephone in 1876. These made possible for the first time instant communications over great distances. Still there were weaknesses in these systems. The cost of laying the necessary cable was great, especially when it was desired to cross bodies of water. A cable was laid across the Atlantic in the 1860's, but several attempts were necessary before it was successful, and the costs of laying it and using it were very high. As a result, other means of long distance communications were constantly being investigated.

As early as 1838 the use of wireless telegraphy was conceived. In that year C.A. Steinheil conceived of a system of wireless telegraphy which used the ground for part of the circuit. He actually was able to signal over very short distances, but the system was neither practical, nor was it wireless telegraphy as we think of it.

Many systems similar to Steinheil's were tried throughout the 19th century but none were very successful. Even Morse tried a system of this type using a body of water as his conductor. Although these systems were referred to as wireless telegraphy, they are not the forerunners of radio as we know it.

Radio waves were conceived of for the first time by James Clerk Maxwell in 1864. Although he never attempted any experiments with radio waves, Maxwell developed a complete theory of their generation and propagation. Before Maxwell, electromagnetism was not clearly understood. He developed equations that described the actions of electromagnetism clearly and so laid the groundwork for others. Briefly, Maxwell showed that electromagnetic action must travel through space at a definite, non-infinite, velocity, the speed of light. This action travels in waves with disturbances that are transverse to the direction in which the waves are travelling.

Maxwell was the first pioneer of radio. He was, however, a scientist, not an inventor. His work was done purely to give a scientific understanding to an area that had caught his interest. It is doubtful that Maxwell ever considered the use of radio waves as a means of communications. At the time, it was not considered proper for a scientist to apply his discoveries to commercial purposes, so Maxwell's work remained confined to scientific circles.

Heinrich Hertz was the first to actually generate and detect radio waves. Like Maxwell, Hertz was a pure scientist, so was interested in investigating the phenomena of electromagnetic waves for purely scientific purposes. Between the years 1884 and 1893 Hertz worked at a number of universities in Germany, doing experimental work to further Maxwell's theories and further understand electromagnetic waves.

Hertz generated radio waves using a simple circuit and apparatus that was generally available at the time. He used a set of batteries which were connected through a Ruhmkorff induction coil to a spark gap. The Ruhmkorff coil is a transformer which has a much greater number of turns in the secondary coil than in the primary. Thus it would step up the voltage of the batteries to a much greater value across the spark gap and make large, powerful sparks possible even with a relatively small set of batteries.

Hertz knew at the time that the discharge of a Leyden jar, or what we would today call a capacitor, produced electric oscillations. Joseph Henry as early as 1832 had suspected this, and others had demonstrated its existance. Thus what Hertz was doing was not original to him although he went further than those before him.

Hertz's apparatus was designed to make the Leyden jar into a better radiator of electromagnetic waves. He "opened up" the Leyden jar, that is, took the two metal plates which make up the Leyden jar, and held them up in the air to form a simple antenna. It was still no easy task to detect the waves, however. Hertz used a simple loop of wire, capped at the ends with small metal balls. These ends were held close together to form a spark gap like that in the generator. By adding small pieces of metal to the balls Hertz could increase their area, and thus their sensitivity to electromagnetic waves, until a spark jumped across the gap when the nearby oscillator was sparked.

This apparatus was fine for laboratory work, and enabled Hertz to confirm Maxwell's theory that electromagnetic waves travel at the speed of light. For practical communications, however, the loop receiver was hardly adequate. Still, Hertz was able to make two discoveries that were very important to radio communications. First, he discovered that electromagnetic waves could be concentrated in one direction by the use of reflectors (like in a beam antenna). Second, and even more important, he found that the dimensions of the receiving coil could be adjusted to give a greater spark. He thus found the idea of syntony, or electric resonance in which a circuit can be tuned to react more strongly to another similarly tuned than it will to others that are tuned differently. This development, although Hertz only brought it to a preliminary state, was the basis for probably the most important part of radio communications.

Hertz pioneered transmission and reception of radio waves using what we would today call UHF frequencies (his work may very well have been in the Amateur 450 MHz band). But Hertz made no attempt to commercialize his discoveries, and in fact it appears he did not realize his work could be practically applied to telegraphy.

Even if Hertz had wanted to use his apparatus for practical wireless telegraphy, it would have needed considerable improvement. The spark gaps oxidized quickly and so needed constant cleaning. The transmitter needed to be more powerful and to radiate more efficiently so that practical distances would be possible. Correspondingly, the receiver needed to be much more sensitive, and give an indication that was easier to read than a spark across a gap. At this point, radio began to leave the realm of pure science for that of technology and many more persons became involved with its subsequent development.

The earliest advance was made by Professor Edouard Branly in 1890. This development was the coherer, a device which would conduct electricity after being subjected to an electric field, such as that from radio waves, although this was not immediately realized. This device was based on the findings of S.A. Varley who used the principal in 1866 for lightning protectors. Calzecchi-Onesti also used a similar device. This device consisted of a glass tube which held two metal plates separated by metal filings. The electric field would cause the metal filings to allign themselves and thus change from insulators to good conductors, allowing the coherer to conduct electricity. The only problem was that the coherer continued to conduct after the electric field stopped so that by itself the coherer was not sufficient to receive intelligence. Branly did not consider this device for the reception of electromagentic waves anyway. He did, however, discover that simply by shaking the coherer it would return to its original state, that of an insulator. □

(To be continued next month)

"timeout!"

By Mike Adlerstein, K1FB

Are you satisfied with your present receiver? Everyone has heard the old adage "if you can't hear them, you can't work them". This is very true. It makes the receiving system the most critical part of your station.

Just what are the requirements for a good receiving system? Volumes of books have been written on this subject. We will try to highlight the main points here. Firstly, we note

that the ham bands constitute one of the most difficult receiver environments: weak signals in the presence of heavy interference (QRM) and static (QRN). One of the first requirements of a good receiver under these conditions is "dynamic range". That is, the ability not to respond to a strong, nearby signal while tuned to a weak one. If the receiver overloads or if the automatic gain circuit pumps the receiver gain up and down, then the dynamic range is not sufficient for the circumstances. To put in perspective what is meant by dynamic range, if you were trying to receive an S3 signal with an S9 signal nearby, that would require the receiver to reject a signal 36 db stronger (a factor of 63 greater voltage at the antenna terminals!). Of course, the ability of the receiver to do this depends on how close together in frequency the signals are.

In judging your receiver on dynamic range you might become conscious of its performance under conditions such as mentioned above, if strong signals always seem "broad", you might try reducing your r.f. gain to eliminate the overload.

A second requirement for a good receiver is most often called "sensitivity". I prefer to call it "noise figure". Noise figure can be defined in a precise mathematical way but, basically it is the ability of a receiver to hear signals so weak that they are buried in noise picked up by the antenna along with the signal. In a receiver with a low noise figure, only a relatively insignificant amount of noise is generated by the receiver itself. Once the criterion of low noise figure is met, it is impossible to significantly improve the "sensitivity" of the receiver.

Most commonly available ham receivers in use today have sufficiently good noise figures on 80, 40, and 20 meters. They often get worse on 15 and 10 meters. To check yours, you can do the following simple experiment. 1)Set your receiver to the band under question and tweek it up on a clear frequency (static noise) through your matched antenna. With an antenna switch, switch to a dummy load. If you find the noise drop noticeable when listening to the dummy load you have a low noise figure receiver. If it shows no decrease, you might improve its performance with a low noise preamplifier or a new first r.f. amplifier tube.

Just to prove Murphy's law we note that often adding a preamplifier and thusly improving your noise figure we simply ruin your receiver dynamic range! □

profiles

By George Young, WA1YAU

This month, Profiles focuses its attention on Allan Kuong, WA1SCS, a long time member of the WARS.

Al was born in Wilmington, Del., on December 3, 1957. Several years later, his family moved to Wellesley, and he has been a resident of this town ever since. His first contact with ham radio was made during the seventh grade at the local junior high school. He was to do a talk on how to build a ham radio. So, he wrote to the ARRL about this and received a reply. He wanted to get a license, but soon lost interest, one reason being that he didn't know about the WARS at the time.

Three years later, at the senior high school, Al heard an announcement over the school's PA system asking students to join the school's radio club. This he did, and he proceeded to become a Novice in 1973 then a General the following year. During this time period, Al was gearing up for the college of his choice, namely Annapolis. In his junior year, his advisor encouraged him to apply for the Naval Academy. He received a Congressional appointment from Margaret Heckler and, upon graduating from high school in 1975, he headed for Annapolis, where, as a physical science major, he is scheduled to graduate this coming May.

In Maryland, Al uses a KDK 2 meter transceiver. Beside ham radio, he is also interested in the emergency medical service (EMS). While at the Academy, he wants to form an EMS radio club. Whenever he comes home to Wellesley, he borrows a friend's rig to get on the h.f. bands. Since Al is graduating this year, we want to wish him the best of luck in the future. □

CHUCKLE KORNER

OHM'S LAW

Inspector Sherlock Ohms of Standard International Yard was driving across the Wheatstone Bridge in his '09 Maxwell, trying to remember Ava Gadro's number, so he could call her and data for the Policeman's Ball when suddenly he blew a tire.

"(OH)-Nernst!" said Sherlock, "I don't have a tire ion with me, but luckily, ammonia short distance from the Ideal Gas Station, run by my friend Saul Vent, who at this moment is freon bail."

Just as Inspector Ohms emerged from the Ideal Gas Station, a rubber policeman whizzed by him with his Carnot Cycle going at full speed. Ohms knew he was deuteride by, but he wondered watt made him rush so. He shouted atom, but he was gone. His reaction was instantaneous as he whipped out after him. By radio activity he learned that Mike Rofarad, Recipro City's top-rankine Rookie, was chasing a suspected joule thief. Ohms chased him down Elect Road, back over the Salt Bridge and up into Farren Heights. He turned left at the Old Ball Mill, down past the Palladium, where the was a mathematical convention, and and all the way to the liquid junction at the end o' Thermic Street. They were almost across the city line when Sherlock's car swerved, and crashed into a van der Waal. The Raman effect ruined his differential, so he couldn't go beyond the limits in it. He quickly volted out of the wreck and took up the chase on foot. He soon came across Mike standing in a magnetic field, holding Ann Hydrate and Al Doll at bay.

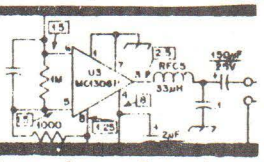
"Watts the meaning of this?" queried the inspector, and the Copper was quick to explain:

"Well, Sir, I stopped at the Invar Bar, a local dyne and dance spot, for a couple of quartz of Lambert Beer when I noticed Ann Hydrate sitting alone at a two-place log table. I knew some jould thieves had made a radon Ethyl Benzene's country estate, and I spotted one of the Benzene rings on her along with a para Ethyl's earrings. Anode an explanation of this but before I could torque to her, she was in her coat of rust and out the door. True to Kopp's Rule, I was quick to follow when I saw her get into her Mercury Chrome 8. I knew I was infra tough chase. However, her engine started Fehling just beyond the city limits and I caught her. She had led me to the missing joules and her accomplice Al Doll, who was about to Barium in a hollow common log under the square roots in this deserted magnetic field."

"Son, you'll go on nights for this!" beamed Ohms. This in effect was a promotion, for in Recipro City, nitrates are much Mohr than those faraday men.□

from the WPI "Tech News", Dec. 1954

Tek Tek



It is common knowledge in electronics that harmonic generation is necessary in all types of radio equipment to achieve desired frequencies. Byproducts of these harmonically related frequencies are certain sub-harmonics which, in general, are of little practical value. The eminent engineer-philosopher Phil Mathewson, W9IR, has raised the question as to whether subharmonics of known frequency and adequate amplitude can be generated by soldering diodes to sinewaves. After much experimentation it has been found that sub-harmonics can, indeed, be generated by such a method, using the diode-sine wave combination as the basic circuit component.

To accomplish its purpose, however, it must be connected to the hypotenuse of a non-linear quadralateral oscillator, which is fed 180 degrees out of phase by the third subcutaneous winding of a parabolic reflector directed to a heading of 270 degrees true.

It should be borne in mind that when the rectifying diode flops the negative half cycle of the sine wave about the line on noncurrent flow, the inductive reactance between the loops of the sine wave must be tuned out. This is accomplised by the formula F/LS where F is the desired frequency and LS is the distance between Lafayette, Ind., and Seaton, Ill., in square kilometers divided by 3.14159. If this sub-harmonic generator is not designed exactly according to the above information, a generation gap will occur. □

from "QRZ", Pilot Knob ARA,
Leavenworth, Kansas

Auctions / Flea Markets

March 31: Worcester Polytechnic Inst. Wireless Association, W1YK, flea market, at Morgan Hall, WPI (off Rt. 9). Hours are 9 am to 4 pm, admission 50¢. Full snack bar. Tables are $5 for a 3x8 and $4.50 for a 3x6. Talk in on 52/52 and 147.99/39.
April 1: Framingham Amateur Radio Association electronics flea market at rear of Framingham police station. Set up from 9 to 10 am, open at 10 am. Talk in 52/52 and 75/15. Food available. $7.50 for any tables left at the door, $1.00 admission.
April 21: South Shore Repeater Assn. Ham auction. Check-in 9 - 12, auction starts at noon. Central Junior High School, Broad Street, Weymouth, Mass. Tag all items with call and short description. Talk-in 147.90/30 and 52/52. Door prizes, refreshments.
April 27: Central Mass. Radio Club auction. Doors open at 6, starts at 7:30 pm. American Legion Post #341, 1024 Main Street, Worcester, Mass. Refreshments available, talk-in 37/97 and 52/52. Info via WA1LEA, 753-7481.
April 29: Bristol County A.R.A. indoor auction. Free admission, food available. Talk-in 31/91 or 52/52. V.F.W. Hall, Rt. 138 Washington and County St. Somerset, Mass. □

OFFICIAL BULLETIN

NR 6, dated February 15, 1979:
A vital service is again being performed via Amateur radio. Over the past few days, Amateurs have been providing the only reliable link between the U.S. State Department, the Pentagon, Andrews Air Force Base and Iran. Since message traffic involving the immediate safety of life is being passed, all Amateurs not actively involved in this effort are requested to avoid those frequencies being used.

NR 9, dated February 22, 1979:
Sincere congratulations to AMSAT on this its Tenth Anniversary. On behalf of the thousands of Amateurs who call OSCAR their friend, and the countless tens of thousands of students throughout the world who have been introduced to the wonders of space science and communications technology through the OSCAR satellites, our deepest gratitude for the significant contributions AMSAT has made to the Amateur Radio service. Best wishes for an equally exciting and productive future.

NR 14, dated March 8, 1979:
During the February solar eclipse did you observe unusual propagation phenomena? To have your observations correlated with those of the solar eclipse nets organized by the Oregon State University Amateur Radio Club, send a copy of your reports to Allen Lefohn, KA7CBV, P.O. Box 196, Clancy, Montana 59634. □

hr REPORT

Amateurs whose licenses expire now have five years instead of one in which to renew them without retaking the exam, the FCC decided at its Tuesday meeting. The extended grace period applies only to the operator's license however; station licenses can be renewed up to one year after they expire so any Amateur who waits more than a year after expiration to renew will receive a new callsign appropriate for his license class from the group that is currently being issued.

hr Report, March 2, 1979

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International support for new Amateur HF bands at 10, 18, or 24 MHz seems to be building, with formal submissions supporting one or more of the new slots now confirmed from all three ITU regions. Don't be in too much of a hurry to swap off your present five or six band radios, however. Even if the WARC does authorize new bands for the Amateur radio service next summer, it will likely be a matter of years before present users can be move out and Amateurs will be permitted to move in.

hr Report, March 9, 1979□

Hereabouts...

Congratulations to Rex Dagastino, ex WB1FTM, on upgrading to Advanced class and a new callsign N1AKL. Also, Frank Callahan, who upgraded to General call some time ago has received his new call changing from WB1CKU to N1ACO. □

WARS MEMBERSHIP ROSTER - - MARCH 1979

Adlerstein, Evelyn WB1CTZ	24 Bobolink Rd., Wellesley, Ma.	02181	235	1130	
Adlerstein, Mike K1FB	24 Bobolink Rd., Wellesley, Ma.	02181	235	1130	
Alman, Harold WA1TKD	2 Meryl St., Medway, Ma.	02053	533	8904	
Anderson, Nels K1UR	32 Westgate Rd., Apt 6, Chestnut Hill Ma	02167	323	5029	
Andrews, George E. WB1FEE	291 Nehoiden St., Needham Ma.	02192	444	3808	
Arnold, Bob WD4AOH	390 Furman Ln, Ladson, S.C.	29456			
Behrens, Gene N1AFI	64 Pine St., Medfield, Ma.	02052	359	4240	
Belasco, Steve WA3CPK	20 Ridge Rd., Waban, Ma.	02168	332	3082	
Bettinelli, Bernard WA1YXB	62 Holworthy St., Cambridge, Ma.	02138	876	2318	
Bettinelli, Bernard III	62 Holworthy St., Cambridge, Ma.	02138	876	2318	WA1ZMD
Bond, Norris WA1WKR	124 Benvenue St., Wellesley, Ma.	02181	235	9226	
Borrow, Joe K1GFH	38 Jarvis Cir., Needham, Ma.	02192	449	2540	
Brack Fred, N3AMR	14 Redding Ridge Dr., Gaithersburg, Md.	20760			
Bradley, Peter M. N1ADX	200 E. Main St., Westboro, Ma.	01581	366	2511	
Brewer, Frank WB1GCU	P.O. Box 249, Dover, Ma.	02030	785	0015	
Brodie, Glenn N1ACN	206 Boston Post Rd., Sudbury, Ma.	01776	443	8677	
Brodie, Nina WB1ECJ	206 Boston Post Rd., Sudbury, Ma.	01776	443	8677	
Brown, Howard J. Jr. K1VFY	30 Greystone Rd., Dover, Ma.	02030	785	1999	
Burtman, Harry WB1ANM	58 Union St., Stoughton, Ma.	02072	344	1885	
Callahan, Frank P. N1ACO	3 Hobbs Brook Rd., Weston, Ma. 02193		894	3407	
Caramanica, Brian WB1ALT	80 Fiske Ave., Waltham, Ma.	02154	899	8014	
Cayon, Denise WB1ECA	71 Walsh St., Medford, Ma.	02155	395	0813	
Chabot, Charles WA1GBF	11 Trinity Ct., Wellesley, Ma.	02181	235	1012	
Chapman, John WA1WER	5 Brook Rd., Dover, Ma.	02030	785	1396	
Chesley, Don WA1HVS	5 Pine Ridge Rd., Natick, Ma.	01760	655	5211	
Chesley, Luella WB1BYK	5 Pine Ridge Rd., Natick, Ma.	01760	655	5211	
Chesley, Cheryl WA1TAL	5 Pine Ridge Rd., Natick, Ma.	01760	655	5211	
Chick, Howard E. WB1ECG	648 Central St., W. Franklin, Ma.	02038	528	1987	
Choy, Wing S. KA1BHZ	197 Chiswick Rd., Brighton, Ma.	02135	254	4675	
Cohan, Morton D. WB2SBW	c/oTeradyne 183 Essex St., Boston, Ma	02111	482	2700	
Curry, David K1TK	Box 1149 W.P.I. Worcester, Ma.	01609	237	2450	
De Cicco, Tony WB1BUS	22 Sawin St., Watertown, Ma.	02172	491	1554	
Del Signore, Larry A.	100 Sawyer Ave., Dorchester, Ma.	02125	282	6231	
Dick, Ray WA1DPX	84 Fontaine St., Marlborough Ma.	01752	481	3290	
Dinman, Mark WB1FCO	27 Alden Rd., Wayland, Ma.	01778	358	2519	
Dinman, Saul K1PDX	27 Alden Rd., Wayland, Ma.	01778	358	2519	
Downing, Bill WA1PQY	90 Arnold Rd., Wellesley, Ma.	02181	235	4484	
Eddy, Dale C. WA1YOL	145 Randolph St., Abington, Ma.	02351	878	1733	
Fasolino, Lud K1LF	34 Pine Plain Rd., Wellesley, Ma.	02181	237	0316	
Fitzpatrick, Al	28 Esten Rd., Stoughton, Ma.	02072	344	7489	
Fusco, Tony WB1FTD	69 Mallard Way, Waltham, Ma.	02154	893	3398	
Gallagher, Edward F.	87 Beaufort Ave., Needham, Ma.	02192	449	1718	
Garfield, Joe WB1BUZ	Doppingbrook Rd., Sherborn, Ma.	01770	655	6033	
Garfield, Frances WB1BVA	Doppingbrook RD., Sherborn, Ma.	01770	655	6033	
Geffen, Robert	43 Pilgrim Rd., Natick, Ma.	01760	653	6877	
Getter, Carl W1MIJ	58 Felch Rd., Natick, Ma.	01760	655	0142	
Goldman, David W1YSW	26 Priscilla Cir., Wellesley, Ma.	02181	235	6259	
Graf, Al W1OQP	391 Worcester Rd., Wellesley, Ma.	02181	235	1538	
Gruber, Ted WB1ECE	11 Eliot Cir., Ashland, Ma.	01721	881	3786	
Hanlon, Bill N1ADY	49 Vine St., Wrentham, Ma.	02093	384	8056	
Hatherley, Jim WA1TBY	46 Hobson St., Brighton, Ma.	02135	254	6042	
Hayes, Hamilton WB1GUZ	21 Shaw Farm Rd., Holliston, Ma.	01746	429	6315	
Heine, Madeline WB1FCX	264 Washington St., Wellesley, Ma.	02181	485	4253	
Heine, Larry WB1FCW	264 Washington St., Wellesley, Ma.	02181	235	1120	
Jacobson, Alan H. WB1ELD	64 McLean St., Wellesley, Ma.	02181	237	0553	

Jacobson, Donald WA1ZXR	64	McLean St.,	Wellesley, Ma.	02181	237 0553
Jansen, Louis T. W1FL	4925	Washington St.,	West Roxbury Ma	02132	327 3646
Jansson, Ed WD4DTC	1130	Willowbrook Trail,	Maitland Fl	32751	
Johnson, Chad N1ABZ	90	Hundreds Rd.,	Wellesley, Ma.	02181	235 5114
Kamitian, Jid W1OJN	93	Orchard Lane,	Holliston, Ma.	01746	429 6867
Keady, John F. SR.	13	Ferndale Rd.,	Natick, Ma.	01760	653 2068
Kelly, Kevin WA1YHV	7	Lawnwood Place,	Charlestown, Ma.	02129	242 0341
Kirschen, David WA1ZRH	8	Westview Rd.,	Framingham, Ma.	01701	877 1497
Knight, George	117	Fairfield St.,	Needham, Ma.	02192	4490298
Kuong, Allan WA1SCS		U.S. Naval Academy,	Annapolis Md	21412	
Langerman, Tzvi, WB1BUW	86	Greenough St.,	Brookline, Ma.	02146	566 6549
Lazewatsky, Joel WA1ZTB	33	Bishop Dr.,	Framingham, Ma.	01701	
Lebow, Joel	73	Mackintosh Ave.,	Needham, Ma.	02192	444 4759
Lenk, Walter K1YTY	22	Priscilla Cir.,	Wellesley, Ma.	02181	237 9289
Levin, Scott WB1FGI	89	Loker St.,	Wayland, Ma.	01778	358 7234
Levin, Ted WB1CFC	8101	Sunrise Lakes Dr. Apt 307	Sunrise Fl	33322	742 6453
Levine, Carlisle WB1ECK	1921	Commonwealth Ave.,	Auburndale Ma	02166	244 3818
Lipson, Neil K1NDF	51	Pratt Dr.,	W. Newton, Ma.	02165	527 7731
MacDonald, Samuel E.	29	Hastings Rd.,	Belmont, Ma.	02178	484 2604
Mackay, Dale WB1BUT	15	Maple St.,	Wellesley, Ma.	02181	235 9541
Magnanti, Dick WB1BUQ	80	Kingsbury St.,	Wellesley, Ma.	02181	235 6371
McDade, Harry W1LMU	194	Winslow Rd.,	Waban, Ma.	02168	527 4269
McDonald, C.J. WB1BUM	48	Hale St.,	Newton, Ma.	02164	332 6091
McDonald, Dennis WB1EBW	48	Hale St.,	Newton, Ma.	02164	332 6091
McGrath, Joe WA1JIR	32C	Quincy Pl.,	Holliston, Ma.	01746	429 6527
McNair, Ken KA1ACX	105	Blake St.,	Needham, Ma.	02192	444 5317
McNamara, Tim WA1YHU		Chestnut St.,	Millville, Ma.	01529	883 6128
Murphy, Jim WB1BUR	45	Eliot Rd.,	Revere, Ma.	02151	289 0769
Nacey, Scott WA1YOJ	69	Forest St.,	Wellesley, Ma.	02181	235 1599
O'Brien, John KA1BDE	330	Coney St.,	E. Walpole, Ma.	02032	769 3796
Oconnor, Jim W1MIC	84	Prince St.,	Needham, Ma.	02192	449 1936
Opalka, Bill WB1ECB	130	Avon St.,	Malden, Ma.	02148	324 5144
Paret, Dick WA1ZLQ	35	Phillips Ave.,	Norwood, Ma.	02062	762 5074
Pavone, Ed AF1P	61	Hawthorne St.,	Belmont, Ma.	02178	484 5659
Puente, Mauricio WB1DZX	11	Blake Rd.,	Newtonville, Ma.	02160	244 1577
Reed, Scott KA1ADB	17	Yurick Rd.,	Needham, Ma.	02192	444 4924
Rehbein, Roy AD1M	1	Cutler St.,	Hopedale, Ma.	01747	473 9610
Rehbein, Scott WB1GZE	1	Cutler St.,	Hopedale, Ma.	01747	473 9610
Riley, Tom WB1BUN	50	Hale St.,	Newton, Ma.	02164	244 3239
Ring, Jordan K1UN	16	White Pine Rd.,	Needham, Ma.	02192	444 7464
Robertson, Ted WB1ECL	28A	Cherry St.,	Somerville, Ma.	02144	666 9378
Rudko, Bob W1HSS	4	Short Rd.,	Holliston, Ma.	01746	429 4082
Rudnick, Leslie KA1BTX	39	Sanderson Rd.,	Lexington, Ma.	02173	862 4533
Rudnick, Karen	39	Sanderson Rd.,	Lexington, Ma.	02173	862 4533
Ruggiero, Dick WA1ZLN	11	Avon St.,	Natick, Ma.	01760	655 1928
Savenor, Joe	15	Meredith Cir.,	Needham, Ma.	02192	449 1160
'Skid' Schermerhorn W1TTY	11	Chestnut St.,	Wellesley, Ma.	02181	235 1987
Schide, John WB1BUV	5	Hudson Rd.,	Natick, Ma.	01760	653 0692
Shoop, Ray N1CW	98	Bigelow St.,	Marlboro, Ma.	01752	481 6305
Sline, George, WB1BVB	395	Weston Rd.,	Wellesley, Ma.	02181	235 5244
Smith, David K1BSO	35	Kingswood Rd.,	Auburndale, Ma.	02166	965 2463
Smith, Karen WB1FGN	55	Singletree Rd.,	Chestnut Hill	02167	232 5646
Smith, Phillip WB1FGJ	55	Singletree Rd.,	Chestnut Hill	02167	232 5646
Smith, Roger W1EOA	7	Berkeley Rd.,	Wellesley, Ma.	02181	235 6239

Spaulding, Les WA1ZTO	14 Madison Ave., Newton, Ma.	02160		
Spotts, Kathy	530 Washington St., Chicago, Il	60302		
Spotts, Pete N1ABS	530 Washington St., Chicago, Il	60302		
Tannozzini, Dave K1ZQW	12 Clearwater Rd., Newton, Ma.	02164	964	0722
Taricano, Mike N1AGK	21 Nathan Rd., Newton Ctr., Ma.	02159	244	1906
Thoresen, Erik K1OGF	28 Lookout Ave., Natick, Ma.	01760	653	1216
Turell, John WA1ZLO	18 Cleveland Rd., Wellesley, Ma.	02181	235	6742
Vaccaro, Dennis WA1WLX	57 Avon Rd., Wellesley, Ma.	02181	235	2542
Vartanian, Matt AC1D	10 Carpenter Rd., Wayland, Ma.	01778	655	1562
Vartanian, Sarkis WA1WDG	10 Carpenter Rd., Wayland, Ma.	01778	655	1562
Vasil, Bruno WB1AJA	58 Bradeen St., Roslindale, Ma.	02131	327	0981
Vasil, Bruno Jr. WB1ACF	58 Bradeen St., Roslindale, Ma.	02131	327	0981
Veznaian, Ken WB1FCY	185 Fellsway West, Medford, Ma.	02155	395	5959
Waugh, Andrew WB1BVE	20 Bernard Rd., Wellesley, Ma.	02181	237	9856
Waugh, Peter WB1BVD	20 Bernard Rd., Wellesley, Ma.	02181	237	9856
Waugh, Stanley WB1BVC	20 Bernard Rd., Wellesley, Ma.	02181	237	9856
Weissel, Dick WA1HRV	39 MacArthur Rd., Natick, Ma.	01760	655	2366
Whitman, Howard	44 Elm St., Wellesley, Ma.	02181	235	9308
Wiles, Chris WA1RGA	32 Westgate Rd. Apt 6, Chestnut Hill	02167	235	9095
Wilmarth, Roger WA1RSV	10 Roberts Rd., Wellesley, Ma.	02181	235	6783
Woodbury, Robert K1ZL	12 Meadowbrook Rd., Dover, Ma.	02030	785	1423
Woods, Farrell WB1ELQ	231 Mossman Rd., Sudbury, Ma.	01776		
Wortman, Denys WB1ECX	168 Bishop Dr., Framingham, Ma.	01701	873	9583
Young, George WA1YAU	525 Worcester Rd., Wellesley, Ma.	02181	237	2082
Young, Bob W1MXI	83 Oak Ave., Belmont, Ma.	02178	484	0950

IF YOU NOTICE ANY ERRORS IN THE ROSTER PLEASE NOTIFY JIM HATHERLEY WA1TBY SO CORRECTIONS CAN BE MADE. THANKS.

Notice: At a recent meeting of the MMRA we had the President of the ARRL, Harry Dannals, W2HD, speak on most subjects and one in particular was that we amateurs should not only write our comments on the RFI questions on page 48 of the March QST. He also mentioned to encourage your neighbors to do so as well. "It seems to us", the editorial of the same edition also has information concerning this bill, so read up on it and let your voice be heard.

The Spark Gap

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